which had shown many small tubercular ulcers. The spleen and lungs, and especially the glands of the mesentery, were also infected.

Mr. Oldfield Thomas, F.Z.S., gave an account of the Mammals obtained by Mr. John Whitehead during his recent expedition to the Philippines, and read some field-notes upon them by the collector.

This memoir will be printed in the Society's 'Transactions.'

The following papers were read :—

1. On the Presence of Ribs in *Polyodon* (*Spatularia*) *folium*.

By Prof. T. W. Bridge, D.Sc., F.Z.S.

[Received May 21, 1897.]

The ordinary text-book and other references to the presence or absence of costal elements in the skeleton of this Chondrostean Ganoid leave much to be desired on the score of precision, and not infrequently are diametrically opposed one to another on matters of fact.

Thus, for example, in that excellent store-house of zootomical knowledge, the 'Handbuch der Anatomie der Wirbelthiere' of Stannius (Aufl. 2, 1854, "Die Fische") there occurs the following passage :—"In den wesentlichsten Verhältnissen zeigt *Spatularia* sich übereinstimmend mit *Accipenser*; nur fehlen die Rippen, oder werden vielmehr durch ligamentöse Stränge vertreten, die an der Basis knorpelige Elemente enthalten" (p. 21). Subsequently, in a footnote (p. 31) it is stated, "Harte Rippen fehlen bei *Spatularia*."

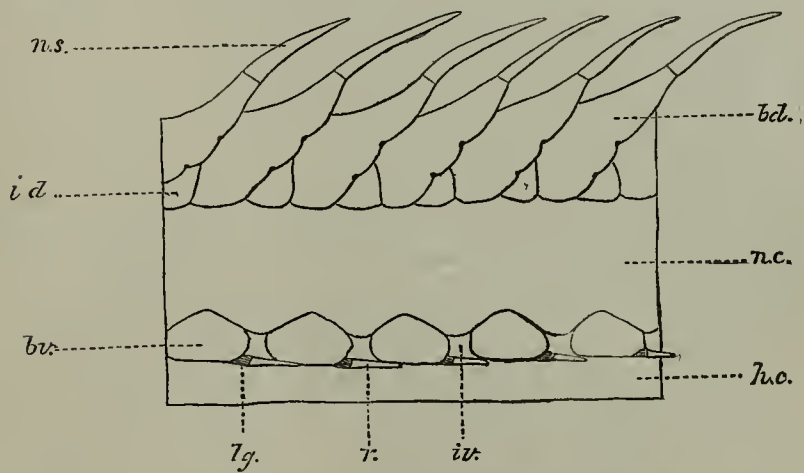
On the other hand, Günther ('The Study of Fishes,' 1880), in referring to the skeleton of the Ganoids, remarks :—"Ribs are present in most, but replaced by ligaments in *Polyodon*" (p. 75).

Again, Wiedersheim, in his 'Comparative Anatomy of Vertebrates' (English translation by Newton Parker, 1886), says, "The ribs of fishes show a very primitive condition usually extending along the whole length of the vertebral column (Lophobranchii, *Spatularia*)" (*l. c.* p. 48). In the same work a figure representing a lateral view of a portion of the vertebral column of *Polyodon* is given (*l. c.* fig. 21, p. 35), but no costal elements are indicated. The same author, in his larger treatise, 'Lehrbuch der vergleichenden Anatomie der Wirbelthiere' (1886), referring to the same point, remarks :—"Bei Knochenfischen, z. B. bei Lophobranchiern, sowie auch bei Ganoiden (*Spatularia*), können die Rippen vollständig fehlen" (*l. c.* p. 80).

Finally, Vogt and Yung, in their 'Lehrbuch der praktischen vergleichenden Anatomie' (1889–94), refer to the absence of ribs in *Chimæra*, many Rays, the Lophobranchii, and *Spatularia* (Bd. ii. p. 534).

In one or two works (Huxley's 'Anatomy of Vertebrated Animals,' p. 139, and the 'Text-book of Zoology' by Boas [English transl. by Kirkaldy and Pollard, p. 361]) statements occur which imply the absence of ribs in *some* existing Ganoids, and, as there is no question as to their presence in *Acipenser*, *Polypterus*, *Amia*, and *Lepidosteus*, the statements in question presumably refer to *Polyodon*. In others, again, no mention is made of the presence or absence of ribs in *Polyodon*, although references to the corresponding structures in *Acipenser* are sufficiently frequent.

These quotations are sufficient to prove that the question of the presence or absence of ribs in *Polyodon* has been the subject of several contradictory statements, and is still involved in no little obscurity.



Lateral view of a portion of the anterior section of the vertebral column of *Polyodon folium*.

bv., inferior vertebral arch or "basi-ventral" cartilage; *bd.*, superior vertebral arch or "basi-dorsal" element; *hc.*, hæmal canal; *id.*, neural intercalary or interdorsal element; *iv.*, inter-ventral or hæmal intercalary cartilage; *lg.*, ligament; *nc.*, notochord; *n.s.*, neural spine; *r.*, rib.

With regard to the actual facts of the case there can be no doubt as to the presence of ribs in *Polyodon*. In a specimen about 40 inches in length I found a series of fifteen simple, filament-like, cartilaginous ribs, commencing anteriorly near the point where the superior vertebral arches first commence distinctly to differentiate themselves from the continuous cartilaginous mass which is formed by the fusion of certain of the anterior arches with the chondrocranium, and terminating a little posterior to the anterior half of the pre-cloacal section of the vertebral column. The third to the fifth ribs, inclusive, are perhaps the longest, being about 7 mm. in length and about 1 mm. in thickness. The first and second are a trifle shorter, but behind the fifth the ribs rapidly decrease in size until the hindermost of the series are less than 1 mm. in length, being, in fact, simple nodules of cartilage. Each rib (fig., *r*) is rather loosely connected by ligament (*lg.*) with the hinder extremity of a longi-

tudinal ridge on the lateral surface of the basal or proximal portion of an inferior vertebral arch or "basi-ventral" cartilage (*bv.*). From its point of attachment the rib is directed obliquely backwards and a little outwards, slightly overlapping the succeeding "interventral" or hæmal intercalary cartilage (*iv.*), and extending into the ventral edge of one of the fibrous septa separating two successive myotomes of the body-wall. Hence it follows that in the latter part of their course the ribs are situated immediately external to the peritoneal lining of the subjacent cœlomic cavity, as in other Ganoids and in Teleosts. No trace of ossification could be detected in any of the ribs.

In two or three instances the cartilage of a rib was broken up into two or more separate nodules, as if undergoing fragmentation as a preliminary to suppression.

Polyodon therefore possesses a series of distinct but fully developed and wholly cartilaginous ribs, in substantial agreement with the account originally given by Stannius, but apparently overlooked by every subsequent writer.

When *Polyodon* is compared with its nearest living ally, *Acipenser*, the differences in the relative development of their costal elements are very striking. In the latter Ganoid, as is well known, nearly all the pre-cloacal "basi-ventrals" possess ribs, comparable both in size and in their relations to the cœlomic cavity to the normally developed ribs of other Ganoids and most Teleosts, and of these the majority are more or less well ossified, only a few of the more diminutive posterior ones being reduced to the condition of simple cartilaginous rods or filaments. In *Polyodon*, on the contrary, the ribs are restricted to about one-half of the normal costiferous region of the vertebral column, and to this may be added their relatively minute size and wholly cartilaginous condition.

How far it is permissible to regard the ribs of *Polyodon* as incipient, nascent, or rudimentary elements, or as degenerate and vestigial structures, is by no means easy to determine with certainty, but their obvious uselessness, and especially their occasional tendency to undergo fragmentation, strongly suggest the probability of the latter alternative.

2. On the Spiders of the Suborder Mygalomorphæ from the Ethiopian Region contained in the Collection of the British Museum. By R. I. Pocock, of the British Museum (Nat. Hist.).

[Received June 2, 1897.]

(Plates XLI.–XLIII.)

This paper, based upon the material contained in the collection of the British Museum, deals with those species which are usually known as Trap-door Spiders and with the larger kinds of hairy